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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/550,282	04/14/2000	Sung-Il Park	1607-0211P	9574

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BIRCH STEWART KOLASCH & BIRCH  
PO BOX 747  
FALLS CHURCH, VA 22040-0747

EXAMINER

QI, ZHI QIANG

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 07/26/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/550,282

Applicant(s)

PARK ET AL.

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 22, recitation "forming an insulating layer electrically insulating said gate line and gate electrode" that is in contradiction with the limitation "forming a gate line and gate electrode connected thereto on a transparent substrate". According to the claim 1, the insulating layer is electrically insulating the data line and the gate line. For examination purpose, it is interpreted that an insulating layer electrically insulating the gate line and the data line.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-4, 6-8, 10-19, and 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,172,728 (Hiraishi).

Claims 1, 15 and 22, Hiraishi discloses (col.5, line 4 – col.7, line 41; Figs.1-2) a

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liquid crystal display device comprising:

(concerning claims 1 and 15)

- gate line (2) formed on a transparent substrate (10);
- source line (3) (data lines) crossing the gate line (2) and formed on the transparent substrate (10);
- gate insulating layer (7) electrically insulating the data line (3) and the gate line (2);
- thin film transistor (TFT) (1) formed at an intersection of the gate line (2) and the data line (3), and connected to the gate line (2) and the data line (3);
- a low-reflective film preferably made of chromium oxide on the gate lines (2) and the source lines (3) to enhance the display quality.

(concerning claim 22)

- gate electrode (12) protruding from the gate line (2) is formed on a transparent substrate (10), i.e., forming a gate line and gate electrode connected thereto on a transparent substrate;
- forming gate insulating film (7) electrically insulating the gate line (2) and the data line (3);
- forming a semiconductor layer (15) over the gate electrode (12);
- forming a data line (3) crossing the gate line (2), a source electrode (13) connected to the data line (3) and on a first portion (such as left portion) of

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- the semiconductor layer (15), and a drain electrode (14) on second portion (such as right portion) of the semiconductor layer (15);
- forming a interlayer insulating film (8) (functions as a passivation layer) having a contact hole (9a) exposing the drain electrode (14) over the transparent substrate (10);
  - forming a pixel electrode (4) on the interlayer insulating film (8) (functions as a passivation layer) and connected to the drain electrode (14) via the contact hole (9a);
  - a low-reflective film preferably made of chromium oxide on the source line (3) (data line).

Although the structure disclosed by Hiraishi is not exactly same as the application claimed, but all the limitations claimed in the claims 1, 15 and 22 are covered by Hiraishi. Especially, Hiraishi indicated (col.6, lines 34-37) that by providing a low-reflective film preferably made of chromium oxide (CrOx) on the gate lines (2) and the source lines (3) (data line), the display quality is enhanced.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to form a low reflective layer on at least a portion of the data line as claimed in claims 1, 15 and 22 for enhancing the display quality.

Claims 2 and 16, Hiraishi indicated (col.6, lines 34-37) that by providing a low-reflective film preferably made of chromium oxide (CrOx) on the gate lines (2) and the source lines (3) (data line), the display quality is enhanced. Therefore, it would have been obvious to those skilled in the art at the time the invention was made to form a low

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reflective layer on at least a portion of the gate line as claimed in claims 2, 13 and 23 for enhancing the display quality.

Claims 3-4, 6-8, 10, 17-19 and 21, Hiraishi discloses (col.6, lines 13 – 37; Fig.2) that the thin film transistor (TFT1) includes a gate electrode (12), a source electrode (13) and a drain electrode (14), and a gate electrode (12) protruding from the gate line (2) (see Fig.2, same as the source/drain electrodes, a source electrode (13) protruding from the data line (3)), so that the gate electrode (12) is connected to the gate line (2) and the source electrode is connected to the data line (3). Hiraishi indicated (col.6, lines 34-37) that by providing a low-reflective film preferably made of chromium oxide (CrOx) on the gate lines (2) and the source lines (3) (data line), the display quality is enhanced. Therefore, forming a low reflective layer on the gate electrode and on the source and drain electrodes as claimed in claims 3-4, 6-8, 10, 17-19 and 21 to enhance the display quality would have been at least an obvious variation.

Claims 11, Hiraishi discloses (col.5, lines 8 –11; col.6, lines 43-44; Fig.2) that an interlayer insulating film (8) (functions as a passivation layer) is formed entirely over the TFT (1), the gate line (2) and the source line (3) (data line), and a pixel electrode (4) is formed on the interlayer insulating film (8) (functions as a passivation layer) and connecting with the drain electrode (14) via contact hole (9a) in the interlayer insulating film (8) (functions as a passivation layer). Hiraishi indicated (col.6, lines 34-37) providing a low-reflective film on the gate lines (2) and the data lines (3), so that the interlayer insulating film (8) (functions as a passivation layer) is also formed over the low-reflective film.

Claims 12-13, 23-24, Hiraishi discloses (col.5, lines 56-57; Fig.1) that the pixel electrode (4) is formed over a portion of the data line (3) and over a portion of the gate line (2).

Claims 14 and 25, Hiraishi discloses (col.7, lines 13 – 24) that color film is provided on the counter substrate (20) (color filter substrate) is desired; and a liquid crystal material (30) sealed between the color filter substrate (20) and the transparent substrate (10).

5. Claims 5, 9 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hiraishi as applied to claims 1-4, 6-8, 10-19, and 21-25 above, and further in view of Applicant admitted prior art.

Claims 5, 9 and 20, Applicant admitted prior art discloses (page 4, lines 2-3 of the specification) that the reflectivity of CrOx is about 3%, and that is the property of a material. Using CrOx as the low-reflective layer, the material CrOx must have such reflectivity, and that would have been at least obvious.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

The examiner can normally be reached on 349.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Sikes can be reached on (703) 308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7721 for regular communications and (703) 308-7721 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi  
July 3, 2002

TOANTON  
PRIMARY EXAMINER